SECTION 6
EXISTING REGULTION OF PERCHLORATE AND PERCHLORATE COMPOUNDS

I. INTRODUCTION

Perchlorate salts are considered hazardous materials due to their chemical properties as oxidizers, reactives and explosives. As a hazardous material, perchlorate salts may be subject to various laws and regulations governing notification, use, storage, and transportation. Currently there are no federal regulatory standards for perchlorate materials under the Clean Water Act (maximum contaminant level or discharge limits), Comprehensive Environmental Response, Compensation and Liability Act (not listed as a hazardous substance), or Resource Conservation and Recovery Act (not a hazardous waste if it does not exhibit the characteristic of reactivity).

Although hazardous substances such as perchlorate may fall under the authority of more than one law or regulation, the materials are not necessarily regulated or covered at the same level or for the same use. Generally compliance thresholds are much lower when the focus is the imminent hazards these materials pose to individuals handling these chemicals. The focus of environmental regulations is on releases that might pose a hazard to the environment and the general public. See Appendix C for federal requirements placed on hazardous material facilities by statue and regulation for incident investigation procedures. For example, the Occupational Safety and Health Administration imposes training, record keeping, and emergency response requirements for employers that process or store over 7,500 pound of ammonium perchlorate. While the threshold for Emergency Planning and Community Right-to-Know Act (also under California's Hazardous Materials Release Response Plans and Inventory programs) require notification and reporting for the storage of greater than 500 pounds of any perchlorate material. The following is a brief summary of the current status of perchlorate materials under laws and regulations.

II. HAZARDOUS MATERIALS MANAGEMENT

A. California Laws and Regulations for Hazardous Materials Storage

Storage of Hazardous Materials
Health and Safety Code Section 25500 et seq. (hazardous materials)

This law is found in the California Health and Safety Code, Section 25500, et seq., and in the regulations to the law in 19 California Code of Regulations Section 2620, et seq. The law requires local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit a Hazardous Materials Business Plan to

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their local administering agency (AA) and to report releases to their AA and the Governor's Office of Emergency Services. The threshold quantities for hazardous materials are 55 gallons for liquids, 500 pounds for solids, and 200 cubic feet for compressed gases measured at standard temperature and pressure.

The Hazardous Material Management Plans and Hazardous Materials Inventory Requirements California Code of Regulations, Title 24, Sections 80113, Part 9
California Hazardous Materials Releases Response Plans and Inventory Program Health and Safety Code, Division 20, Chapter 6.95, Article 1 California Code of Regulations, Title 19, Sections 2620-2732 (supplemental regulations)

Hazardous Materials Releases Response Plans and Inventory Program (Business Plan) is the California equivalent to the EPCRA reporting requirements and sections of the Uniform Fire Code requirements for hazardous materials emergency planning.

The California legislature perceived no difference between the emergency planning requirements of the Hazardous Materials Management Plans and Hazardous Materials Inventory required by the California Fire Code and the Hazardous Materials Business Plan and Hazardous Materials Chemical Inventory required by Article 1 of Health and Safety, Chapter 6.95. To eliminate duplicate emergency planning reporting the legislature enacted AB 1777 in 1993.

In AB 1777, the Article 1 requirements of Chapter 6.95 were deemed to meet the State requirements for emergency response and pre-planning information for chemical handling facilities. The legislature also realized that the fire service had additional hazardous materials information needs for building construction and life safety protection systems. To meet these needs the legislature allowed the collection of additional information if required by the local chief.

Hazardous Materials Plans
Hazardous materials handling and storage, and training in the handling of hazardous materials are set forth in more detail in hazardous materials plans.

Hazardous Materials Business Plan (HMBP)
An HMBP is required by the California Code of Regulations, Title 19 and the Health and Safety Code, section 25504. The plan will include an inventory and location map of hazardous materials on-site and an emergency response plan for hazardous materials incidents. The topics to be covered in the plan are:

- Facility identification;
- Emergency contacts;
- Inventory information (for every hazardous material);

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- MSDS for every hazardous material;
- Site map;
- Emergency notification data;
- Procedures to control actual or threatened releases;
- Emergency response procedures;
- Training procedures; and
- Certification.

California Accidental Release Prevention (CalARP)
Health and Safety Code Section 25531

California Accidental Release Prevention law regulates the registration and handling of acutely hazardous materials. Acutely hazardous materials are any chemicals designated as extremely hazardous substances by the USEPA as part of its implementation of Superfund Amendments and Reauthorization Act Title III. Health and Safety Code, section 25531 expands the programs mandated by the Waters Bill and overlaps or duplicates some of the requirements of Superfund Amendments and Reauthorization Act and the Clean Air Act. Facilities handling or storing acutely hazardous materials at or above Threshold Planning Quantities must register with their local AA and prepare a Risk Management Plan, formerly known as a Risk Management and Prevention Program (RMPP). The Risk Management Plan program, also known as the Accidental Release Prevention (ARP) program, is regulated under Title 19, California Code of Regulations, Chapter 4.5. The Threshold Planning Quantities for ammonium perchlorate is 500 pounds.

California Safe Drinking Water and Toxics Enforcement Act (Proposition 65)
Health and Safety Code Section 25249.5 - .13

This law identifies chemicals that cause cancer and reproductive toxicity, informs the public of exposure, and prevents discharge of the chemicals into sources of drinking water. Lists of the chemicals of concern are published and updated periodically. The Act is administered by California's Office of Environmental Health Hazard Assessment.

California's Proposition 65 prohibits the discharge of certain listed chemicals into drinking water unless the discharger can demonstrate "no significant risk." This prohibition puts the burden of proof on the discharger to show that the discharge does not exceed a reasonable risk level, which is quite different from most regulatory programs in which the government sets an acceptable discharge level. Proposition 65 also requires manufacturers of listed chemicals to provide clear warning labels on their products.

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California Occupation Safety and Health Act
California Code of Regulations, Title 8, Section 5194

Employers, manufacturers, importers and distributors have responsibilities to workers under the California Occupational Safety and Health Act. These include:

Proposition 65 Requirements, §5194(b)(6);
Hazard Determination, §5194(d);
Written Hazard Communication Program (HCP), §5194(e);
Labels and Other Forms of Warning, §5194(f);
Material Safety Data Sheets, §5194(g);
Employee Information and Training, §5194(h); and
Trade Secrets, §5194(i).

B. Federal Laws and Regulations for Hazardous Materials Storage

Emergency Planning and Community Right-to-Know Act (EPCRA) (1986)
42 U.S.C. 11011 et seq.
40 CFR 370 Hazardous Chemical Reporting Community Right to Know

Emergency Planning and Community Right-to-Know Act (EPCRA) is also known as Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). Firms handling chemicals determine whether they need to submit reports under sections 302, 304 or 313 of EPCRA. Perchlorate salts are not specifically listed on any of these lists.

EPCRA section 302 requires certain emergency planning activities to be conducted when Extremely Hazardous Substances (EHS) are kept at or above the Threshold Planning Quantity (TPQ). Firms that receive or produce EHS in quantities at the TPQ levels must notify Local Emergency Planning Committees, provide material safety data sheets and submit inventory forms.

Releases of CERCLA hazardous substances in quantities equal to or greater than their reportable quantity (RQ) are subject to reporting to the National Response Center. Such releases are also subject to state and local reporting under section 304 of EPCRA.

Emissions, transfers, and waste management data must be reported annually as part of the community right-to-know provisions of EPCRA section 313 Toxic Chemicals and of the Pollution Prevention Act. Reporting is triggered by the quantity of a chemical that is manufactured, processed, or otherwise used during the calendar year.

Under 40 CFR section 370.25, the owner or operator of a facility must annually submit an inventory form containing information on specified hazardous chemicals present at the facility during the preceding calendar year above specified threshold levels to the state emergency response commission, the local emergency planning committee, or the fire department with jurisdiction over the facility.

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Occupation Safety and Health Act (1970)
29 USC 651 et seq.
29 CFR Section 1910 et seq.-Occupational Safety and Health Standards

Hazardous and toxic substances can be defined as those chemicals present in the workplace which are capable of causing harm. In this definition, the term “chemicals” includes dusts, mixtures, and common materials such as paints, fuels, and solvents. OSHA currently regulates exposure to approximately 400 substances; the U.S. Environmental Protection Agency's (EPA's) Toxic Substance Control Act (TSCA) Chemical Substances Inventory lists information on more than 62,000 chemicals or chemical substances.

The definition of explosive under OSHA (29 CFR 1910.109(a)(3)) references the Department of Transportation (DOT) regulations. DOT classifies ammonium perchlorate either as an oxidizer or high explosive under the DOT standard 49 CFR 172.101 "Hazardous Material Table." Current DOT regulations require the shipper to classify hazardous materials. If ammonium perchlorate is intended to be used as an explosive, or if the shipper has doubt that it could be explosive, the shipper must ensure that it meets the United Nations (UN) Tests and Criteria. The distinction between an explosive and an oxidizer is based on test results.

The only perchlorate salt with an established OSHA threshold quantity is ammonium perchlorate. Requirements include employee participation, process safety information, process hazard analysis, training, incident investigation, emergency planning and response, and compliance audits when threshold quantities have been met.

Section 1910.109 of 29 CFR applies to the manufacture, keeping, having, storage, sale, transportation, and use of explosives, blasting agents, and pyrotechnics at or above the specified threshold quantities. The threshold quantity for ammonium perchlorate is 7,500 pounds.

Section 1926.64 of 29 CFR applies to a process which involves a chemical at or above specified threshold quantities. The threshold quantity for ammonium perchlorate is 500 pounds.

Importation, Manufacture, Distribution and Storage of Explosive Materials
18 USC Chapter 40
27 CFR Part 55

The law prohibits any person from storing any explosive materials in a manner not in conformity with the regulations promulgated by the Secretary of the Treasury (18 U.S.C. 842(J). Pursuant to this section, the Secretary has prescribed storage regulations in 27

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CFR Part 55, Subpart K. Since display fireworks are not exempt from regulations, they must be stored in conformity with the regulations. Display fireworks generally contain perchlorate mixture explosives, potassium chlorate base explosive mixtures, and black powder, which are entered on the List of Explosive Materials with numerous others.

Display fireworks should be stored as low explosives in facilities meeting the requirements for type 4 storage facilities, prescribed by 27CFR section 55.210 unless they contain other classes of explosives.

The manufacturer of exempt or nonexempt fireworks having stocks of explosive materials on hand to be used in the manufacture of fireworks must store his stocks in conformity with applicable storage requirements. In storage facilities where weight restrictions apply, the net weight of the explosive materials may be used. To determine the actual weight of the explosive materials, it may be necessary to contact their manufacturers.

Bureau of Alcohol, Tobacco and Firearms (BATF)
27 CFR sections 55.210 to 55.224

There are five types of magazines required for the storage of explosives. These magazines range from permanent structures to portable indoor or outdoor magazines. The class of explosive and/or quantity determines the type of magazine required for storage. The construction, housekeeping, repair and distance for storage requirements are prescribed in.

C. Federal Laws and Regulations for Hazardous Materials Importation, Use, Manufacture, Processing

Applicability is intended for chemical user activities that include importation, use, manufacture, and processing of chemicals. These requirements have different safety purposes based on the characteristics of perchlorate materials. Although all of these laws are intended to protect against toxic chemicals, these laws currently only apply to perchlorate salts that are oxidizers or explosives. Notification, hazard analysis, hazard communication, chemical inventory, tracking, emergency response plans are the principal components of required management for facilities with activities involving chemicals.

Toxic Substance Control Act (1976)
15 U.S.C. s/s 2601 et seq.

Congress enacted the Toxic Substances Control Act (TSCA) in 1976, to become effective January 1, 1977. The Act authorizes the Environmental Protection Agency

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(EPA) to secure information on all new and existing chemical substances and to control any of those substances determined to cause an unreasonable risk to public health or the environment. Under earlier laws EPA had authority to control toxic substances only after damage occurred. The earlier laws did not require the screening of toxic substances before they entered the marketplace. TSCA closed the gap in the earlier laws by requiring that the health and environmental effects of all new chemicals be reviewed before they are manufactured for commercial purposes.

Relevant sections of the law pertaining to perchlorates include both Section 8 of TSCA authorizes EPA to require persons engaged in the manufacture (manufacture includes import for purposes of TSCA), processing and distribution in commerce of chemical substances to keep certain records and report certain information. The TSCA section 13 rule requires chemical importers to submit certification statements concerning import shipments of chemical substances. Perchlorates are listed on the TSCA Inventory, but the common forms of perchlorate do not show up Health & Safety Reporting List, the Chemical Test Rules, TSCA Section 12b, or TSCA Significant New Use Rule.

Determinations regarding compliance with TSCA must be made on a case-by-case basis if an activity involves the manufacture, processing, distribution in commerce, use, and/or disposal of a new or existing chemical substance or mixture that may present an unreasonable risk of injury to health or the environment. The TSCA program is implemented by EPA and is not delegated to any state agency.

Importation, Manufacture, Distribution and Storage of Explosive Materials
18 USC Chapter 40
27 CFR Part 55

Title XI of the Organized Crime Control Act of 1970 establishes controls over explosive materials for civilian use, including black powder and other pyrotechnic compositions commonly used in fireworks. Part 55 of Title 27, Code of Federal Regulations (CFR), contains the regulations which implement Title XI. section55.141(a)(7) exempts "the importation and distribution of fireworks classified as Class C explosives and generally known as 'common fireworks,' and other Class C explosives, as described by U.S. Department of Transportation regulations in 49 CFR 173 .100(p),(r),(t),(u), and (x)."

Section 55.141 (a)(7) does not exempt "special fireworks" (often referred to as "display fireworks") which are classified by the Department of Transportation as Class "B" explosives. The exemption applies only to "common fireworks" in a finished state classified by the Department of Transportation as Class "C" explosives (49 CFR, section 173.100).

The law prohibits any person from storing any explosive materials in a manner not in conformity with the regulations promulgated by the Secretary of the Treasury (18 U.S.C. 842(J). Pursuant to this section, the Secretary has prescribed storage regulations in 27 CFR Part 55, Subpart K. Since display fireworks are not exempt from regulations, they

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must be stored in conformity with the regulations. Display fireworks generally contain perchlorate mixture explosives, potassium chlorate base explosive mixtures, and black powder, which are entered on the List of Explosive Materials with numerous others.

Bureau of Alcohol, Tobacco and Firearms (BATF)
27 CFR sections 55.210 to 55.224

The Federal explosives laws impose certain controls on the manufacture, distribution, and storage of explosives. Under these laws, Bureau of Alcohol, Tobacco and Firearms (ATF) is required to publish an annual list of explosives deemed to fall within the law's coverage. The list is intended to include any and all mixtures containing any of the materials on the list. While the list is comprehensive, it is not all-inclusive. The fact that an explosive material may not be on the list does not mean that it is not within the coverage of the law if it otherwise meets the statutory definitions in 18 U.S.C. 841.

In the 2003 List of Explosive Materials, the Department of Justice added ammonium perchlorate to the list of explosives. Ammonium perchlorate had appeared on the List of Explosive Materials until 1991 and has been re-introduced to the 2003 List as a corrective measure. It has retained its designation as an explosive since 1991, despite the fact that it was inadvertently omitted from previous lists.

III. HAZARDOUS WASTE

A. California Laws and Regulations for Hazardous Waste

Hazardous Waste Control Laws
Health and Safety Code Section 25100 et seq. (hazardous waste)

This law is found in the California Health and Safety Code, Section 25100, et seq., and in the regulations to the law in 22 California Code of Regulations Section 66260, et seq. California has developed hazardous waste regulations that are equivalent to the federal laws, but that are much more stringent in their application. The California Hazardous Waste Control laws regulate the classification of solid and hazardous wastes and recyclable materials, and the general requirements governing hazardous waste generation, storage, transportation, treatment and disposal of hazardous waste in the State. More detailed information concerning the implementation of these requirements is given in Title 22 of California Code of Regulations. The Hazardous Waste Control Law (HWCL) empowers the Department of Toxic Substance Control (DTSC), a division of Cal-EPA (formerly part of the Department of Health Services), to administer the state's hazardous waste program and implement the federal program in California.

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Hazardous Substance Account Act
Health and Safety Code, section 25300 et seq.

The law also known as the Carpenter-Presley-Tanner Hazardous Substance Account Act ("HSAA") takes its common name - the state Superfund law - from the federal analog, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), which created a "Superfund" to pay for government-run cleanups of the nation's most contaminated sites.

DTSC has authority, under sections 25355 and 25358.3, to order potentially responsible parties ("PRPs") to perform cleanups at these sites and, if the PRPs fail, to perform cleanups itself. Authorization for cleanup orders may be transferred from the HSAA to DTSC's corrective action program under the Hazardous Waste Control Law ("HWCL," sections 25100 et seq.) or to the jurisdiction of the Regional Water Quality Control Boards under the Water Code.

Authorization for the voluntary cleanup program was created under section 25355.5. It enables owners of low-priority contaminated sites to obtain timely DTSC oversight and sign-off for cleanups undertaken for economic and development reasons rather than in response to a DTSC order. These sites are sometimes called "brownfields," to distinguish them from higher-priority "blackfields" and pristine "greenfields."

B. Federal Laws and Regulations for Hazardous Waste

Resource Conservation and Recovery Act (1976)
42 U.S.C. s/s 321 et seq.
Solid Waste Disposal Act (1965) 42 USC 6901-6992k.

The RCRA was first adopted as the Solid Waste Disposal Act. RCRA requires owners and operators of facilities that treat, store, and dispose of hazardous waste, including federal agencies, to obtain a permit specifying how their facilities will safely manage the waste.

Under RCRA's corrective action provisions, facilities seeking or holding RCRA permits can be required to clean up their hazardous waste contamination. The corrective actions can be specified in the facility's operating permit, in a separate corrective action permit, or through an enforcement order.

California is authorized by the EPA to administer its own program in lieu of the federal program under RCRA to order a cleanup of hazardous waste when there is an imminent and substantial endangerment to public health or the environment. Regulations define

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hazardous wastes to include those that are specifically listed in the regulations as well as those that are "characteristic wastes." Characteristic hazardous wastes are defined as wastes that are ignitable, corrosive, reactive, or toxic. A federal district court in California recently ruled, in part, that perchlorate is a hazardous waste under RCRA because it is ignitable.

Comprehensive Environmental Response, Compensation and Liability Act (1980) 42 U.S.C. s/s 9601 et seq.
Superfund Amendments and Reauthorization Act (October 17, 1986)

CERCLA governs the cleanup of releases or threatened releases of hazardous substances, pollutants, or contaminants. CERCLA's definition of a hazardous substance includes substances regulated under various other environmental laws, including RCRA, the Clean Air Act, the Clean Water Act, and the Toxic Substances Control Act. Under section 120 of CERCLA, the federal government is subject to and must comply with CERCLA's requirements to the same extent as any nongovernmental entity.

The Superfund Amendments and Reauthorization Act (SARA) amended and reauthorized CERCLA. SARA not only extended the life of CERCLA, but made several important changes to provide new tools for enforcement, remedies, funding, and both state and individual input. SARA also resulted in a revision of the U.S. Environmental Protection Agency Hazard Ranking System to assess the degree of hazard to humans and the environment.

IV. BUILDING AND FIRE CODE REQUIREMENTS

The design, engineering, and construction of hazardous materials storage and dispensing systems will be in accordance with all applicable codes and standards, including the following:

1997 Uniform Building Code
2000 Uniform Fire Code Article 80, Hazardous Materials
2001 California Building Standards Code Title 24 of the California Code of Regulations
2001 California Fire Code Title 24, California Code of Regulations, Part 9

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Title 24 of the California Code of Regulations, known as the California Building Standards Code contains the regulations that govern the construction of buildings in California. Title 24 is composed of 12 parts. California Building Code and the California Fire Code are only two of the 12 parts. The 2001 edition of the California Building Standards Code (Title 24) became effective on November 1, 2002. Projects submitted on or after this date must be designed and constructed in compliance with all parts of the 2001 edition of Title 24. State Building Standard Code and the Health and Safety Code Sections 18901 to 18949 incorporate the UBC, Uniform Fire Code, and Uniform Plumbing Code.

The 2001 Edition of the California Building Code (CBC) contains general building design and construction requirements relating to fire and life safety, structural safety, and access compliance. CBC provisions provide minimum standards to safeguard life or limb, health, property and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location and maintenance of all buildings and structures and certain equipment. This version of the code is the 1997 Uniform Building Code (UBC) with necessary California amendments.

The California Fire Code (CFC) contains regulations consistent with nationally recognized accepted practice for the safeguarding to a reasonable degree of life and property from the hazards of fire explosion, and dangerous conditions arising from the storage, handling and use of hazardous materials and devices, and from conditions hazardous to life or property in the use of occupancy of buildings hazardous to life or property in the use or occupancy of buildings or premises and provisions to assist emergency response personnel. These fire-safety-related building standards are referenced in other parts of Title 24. The 2001 Edition of this code is the 2000 Edition of the Uniform Fire Code of the Western Fire Chiefs Association with California amendments.

The California Fire Code regulates the use, handling and storage requirements for hazardous materials at fixed facilities. The California Building Code uses a hazard classification system to determine what protective measures are required to protect fire and life safety. These measures may include construction standards, separations from property lines, and specialized equipment. To insure that these safety measurers are met, the California Fire Code employs a permit system based on hazard classification. In some cases, this hazard system has lower reporting requirements than Article 1 of Chapter 6.95.

National Fire Protection Association
NFPA 430 – Code for Storage of Liquid and Solid Oxidizers

The 2004 edition of NFPA 430 provides requirements for the safe storage of liquid and solid oxidizers including, commercially available strengths of oxidizers used for water treatment. Proper storage and handling will decrease the risks of explosion,

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spontaneous ignition of combustible materials, rapid decomposition, and other hazardous situations. NPFA requires hazards associated with oxidizer storage be evaluated and associated personnel trained. This code was recently changes to include:

- Requirements to restrict storage exposure from excessive temperatures;
- Revised sprinkler requirements for Class 3 oxidizers stored in sprinklered buildings;
- Revised allowable storage amounts for Class 1-3 oxidizers that generally reduce the amount of material that can be stored without using sprinkler protection;
- Revised requirements for storage in mercantile occupancies;
- Annex material to assist emergency responders so they have a better understanding of the hazards and behavior of oxidizers; and
- Annex material on the physical properties of oxidizers.

Other National Fire Protection Association standards applicable to oxidizers or explosive are NPFA 45, and NFPA 495. NFPA 45 or the Fire Protection for Laboratories Using Chemicals requires that chemical hazards be identified for all chemicals present in a laboratory. The purpose of this standard is to provide basic requirements for the prevention and control of fires and explosions involving the use of chemicals in laboratory-scale operations. NFPA-45 outlines the maximum allowable quantities of liquids and gases, as well as, requirements for laboratory ventilating systems and hoods.

NFPA 495, Explosive Materials Code address issues concerning the manufacture, transportation, storage, sale, and safe use of a wide range of explosive materials including: blasting agents, water gel and emulsion materials, smokeless propellants, black powder propellants, and small arms ammunition.

V. TRANSPORTATION

The Hazardous Materials Transportation Act 42 USC 1801-1812
Department of Transportation Standards 49 CFR Parts 100 through 199, Hazardous Materials
California Vehicle Code, 13 California Code of Regulations 1160, et seq.

The transport of hazardous materials is subject to federal requirements found in 49 CFR Parts 100 through 199 and California requirements in California Code of Regulations title 13. These regulations cover items such as shipping papers, marking and labeling of packages, placarding of vehicles, and the proper packaging to use for hazardous

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materials. These regulations are extensive and subject to change frequently. Some requirements are the initial responsibility of the shipper of hazardous materials, final responsibility falls on the carrier to ensure that hazardous materials are transported in compliance with the regulations. The following items the general guidelines when transporting hazardous materials.

Under the HMTA, chemical manufacturers and transporters must comply with Department of Transportation (DOT) regulations covering shipment preparation, packaging, labeling, handling, loading and unloading, routing, emergency and security planning, incident notifications, and liability insurance. Covered substances include RCRA hazardous materials, as well as additional materials designated by DOT.

Shipping Papers

Almost all hazardous materials shipments must be accompanied by shipping papers which contain specific information, including:

Proper Shipping Name of the Material;
Hazard Class;
Identification Number;
Packing Group (PG) of the Material, if applicable;
Total Quantity;
Emergency Telephone Number; and
Emergency Response Information.

Marking

The proper shipping name and identification number must be put on hazardous materials packages.

Labeling

Transporter must place labels identifying primary and secondary hazards on non-bulk packages.

Placards

Transporters of hazardous materials must place placards identifying primary and secondary hazards (if applicable) on vehicles and bulk packages. When placards are required on a vehicle, they must be displayed on all 4 sides of the vehicle until the
empty cargo tank or portable tank has been emptied of hazardous materials and cleaned of residue.
Containers used to transport hazardous materials must be built to United States Department of Transportation (USDOT) specifications and properly marked and maintained as such cardboard boxes, drums, portable tanks and cargo tanks.

Hazardous Materials Registration

Shippers or transporters of hazardous materials, may be required to register with the USDOT, in accordance with 49CFR Part 107.601. A registration statement

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must be submitted to the USDOT and the appropriate fee must be paid if you offer for transportation or transport.

Incident Reporting
The unintentional release of hazardous materials requires a detailed incident report to be submitted to the USDOT. More serious incidents may require immediate notice to the National Response Center.

Ammonium Perchlorate
DOT classifies Ammonium Perchlorate either as an oxidizer or high explosive under the DOT standard 49 CFR 172.101 "Hazardous Material Table." This table is for domestic uses and does not specify particle size for ammonium perchlorate. DOT 49 CFR 172.102 "Optional Hazardous Materials Table" lists ammonium perchlorate with average particle size under 45 microns as explosive for the purpose of international shipping.

Current DOT regulations require the shipper to classify hazardous materials. If ammonium perchlorate is intended to be used as an explosive, or if the shipper has doubt that it could be explosive, the shipper must send samples to either the Bureau of Mines (BOM) or the Bureau of Explosives (BOE) for testing and classification. DOT has revised its standards to require that for ammonium perchlorate to be classified as an explosive, it must meet the United Nations (UN) Tests and Criteria, Recommendation on the Transportation of Dangerous Goods. The distinction between ammonium perchlorate as explosive and as oxidizer is based on test results. Laboratory testing is required in making the classification determination.

VI. WATER QUALITY REQUIREMENTS

California Porter-Cologne Water Quality Act
California Water Code, sections 13000 et seq.
State Water Resources Control Board Order 97-03-DWQ (SWPP)

Porter-Cologne Water Quality Control Act, adopted in 1969, that requires the maintenance of the highest reasonable quality of the state's waters. It authorizes the Regional Water Quality Control Board (RWQCB) to supervise cleanup efforts at spill sites that have affected groundwater.

California is a designated state that has been delegated authority by the USEPA to operate the NPDES permitting program. A designated state has the authority to issue and enforce storm water permits. A designated state also is required to develop regulations and guidelines that must be equal to, or better than EPA regulations. The State Water Resources Control Board (SWRCB) has elected to issue a state wide general permit that will apply to all industrial storm water discharges requiring a permit.

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To obtain authorization for continued and future industrial storm water discharge, owners, or operators when the owners do not operate the facility, must comply with the requirements of General Permit. There are 10 basic groups of industrial facilities that require permitting under the General Permit. If a facility must comply with the storm water regulations, there are seven basic requirements of the General Permit.

(1) Filing Notice of Intent with SWRCB;
(2) Preparation of Storm Water Pollution Prevention Plan;
(3) Preparation of Visual Monitoring Plan;
(4) Sampling and Analysis of Storm Waste Discharge;
(5) Submission of Annual Report to Appropriate Regional Board;
(6) Elimination of All Non-Storm Water Discharges to Storm Water System; and
(7) Implementation of Best Management Practices at Facilities.

Compliance oversight of the NPDES permitting program flows from the EPA, to the State of California, and finally to local governmental agencies. In California, the SWRCB issues the NPDES Storm Water General Permit. In addition, local county and city agencies are required to oversee those construction projects that have been issued a permit. These local enforcement agencies also must promulgate regulations and guidelines that are equal to or better than, the California state requirements.

Clean Water Act (1972) 33 U.S.C. ss/1251 et seq
Water Quality Act (1987) 33 U.S.C. ss/1251 et seq. Code of Federal Regulations, Part 403 (POTW)

The Clean Water Act (CWA), formerly known as the Federal Water Pollution Control Act, is the principal statue that governs the pollution in the nation's lakes, rivers, and coastal waters. The Act's goal was to attain a level of water quality that "provides for the protection and propagation of fish, shellfish, and wildlife, and provides for recreation in and on the water" by 1983 and to eliminate the discharge of pollutants into navigable waters by 1985.

The Clean Water Act has five main elements: (1) a system of minimum national effluent standards for each industry, (2) water quality standards, (3) a discharge permit program that translates these standards into enforceable limits, (4) provisions for special problems such as toxic chemicals and oil spills, and (5) a revolving construction loan program (formerly a grant program) for publicly-owned treatment works (POTWs).

Sections of the CWA which are most relevant to perchlorate deal with the discharge permit program, effluent standards, and water quality standards. Facilities that discharge wastewaters to either a surface water body or a publicly-owned treatment system must comply with the CWA.

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National Pollutant Discharge Elimination System
The primary method by which the Act imposes limitations on pollutant discharges is the nationwide permit program referred to as the National Pollutant Discharge Elimination System (NPDES). Under the NPDES program any person responsible for the discharge of a pollutant or pollutants into any waters of the United States from any point source must apply for and obtain a permit. NPDES permits establish restrictions on the types and amounts of pollutants discharged from various industrial, commercial, and public sources of wastewater. Other sections of the Act include requirements for technology-based effluent limitations, water quality-based effluent limitations, individual control strategies for toxic pollutants, new source performance standards, and regulation of toxics and indirect discharges.

Publicly Owned Treatment Works (POTWs)
The Clean Water Act also requires the establishment of nationally applicable pretreatment standards that restrict pollutant discharges for those who discharge wastewater indirectly through sewers flowing to POTWs. Facilities that discharge to a municipal or publicly owned wasterwater treatment system do not have to obtain an NPDES permit, but they must follow the pretreatment regulations. These pretreatment regulations require that industrial dischargers remove or treat all pollutants that could pass through the municipal system untreated or could adversely affect the performance of the municipal system. Toxic pollutants are the primary concern of these regulations.

Water Quality Standards
40 CFR Part 131 et seq.

On February 4, 1987, Congress enacted the Water Quality Act, making substantial additions to the Clean Water Act directly affecting the water quality standards program. The Clean Water Act provides the statutory basis for the water quality standards program. The regulatory requirements governing the program, the Water Quality Standards Regulation, are published at 40 CFR 131.

The Clean Water Act requires the adoption of numeric criteria for toxic pollutants listed under the Clean Water Act for which criteria have been published, if the presence of these pollutants is likely to affect a water body's use. These water quality standards are the foundation of the water quality-based control program mandated by the Clean Water Act. Water Quality Standards define the goals for a waterbody by designating its uses, setting criteria to protect those uses, and establishing provisions to protect water quality from pollutants. The compilation of national recommended water quality criteria for the protection of aquatic life and human health includes approximately 150 pollutants. Perchlorate is not listed as a toxic pollutant under the CWA.

Safe Drinking Water Act (December 16, 1974).

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In 1974 Congress enacted the Safe Drinking Water Act (SDWA) to manage potential contamination threats to groundwater. SDWA is the principal federal statue for addressing drinking water at the federal level. The SDWA authorizes EPA to issue national primary drinking water regulations setting maximum contaminant level standards for drinking water that must be met by public water systems. EPA may authorize states to carry out primary enforcement authority for implementing the Safe Drinking Water Act if, among other things, the state adopts drinking water regulations that are no less stringent than the national primary drinking water regulations. EPA has set standards for approximately 90 contaminants in drinking water. Perchlorate salts and none of the more than 200 chemical contaminants associated with munitions use are currently regulated under the Safe Drinking Water Act.

To ensure that drinking water is safe, SDWA sets up multiple barriers against pollution. These barriers include: source water protection, treatment, distribution system integrity, and public information. Primary drinking water standards promulgated under the SDWA apply to drinking water "at the tap" as delivered by public water supply systems. The drinking water standards are used to determine groundwater protection regulations under a number of other statutes [e.g., the Resource Conservation and Recovery Act (RCRA)]. Therefore, many of the SDWA requirements apply to storage and disposal of materials containing inorganic chemicals, organic chemicals, and hazardous wastes, and cleanup of contaminated sites.

Unregulated Contaminant Monitoring Regulation

The 1996 amendments to the Safe Drinking Water Act required EPA to establish criteria for a monitoring program for unregulated contaminants and to publish a list of contaminants--chosen from those not currently monitored by public water systems--to be monitored. These monitored contaminants do not have established a maximum contaminant level (MCL) or treatment technology. EPA's regulation, referred to as the Unregulated Contaminant Monitoring Regulation was issued in 1999, and a list of contaminants, known as the Contaminant Candidate List (CCL) was issued in 1998 which included perchlorate. The purposes of the regulation are to determine whether a contaminant occurs at a frequency and in concentrations that warrant further analysis and research on its potential effects and to possibly establish future drinking water regulations. EPA concluded in 1998 that it could not regulate perchlorate because the EPA lacked both a risk assessment and occurrence data.

Large public water systems serving more than 10,000 persons are required to report all perchlorate contaminant monitoring results under UCMR. To date, perchlorate has been detected in over 395 drinking wells in California serving up to 10,000 people and up to 563 drinking wells total.

VI. HEALTH GOALS

The State of California and the USEPA are on parallel tracks to establish a drinking water standard for perchlorate. Their timelines are different. California is planning to

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announce a drinking water standard for perchlorate by 2005. The USEPA had been waiting for a review of toxicological data by the National Academy of Sciences (NAS) which was recently completed in January 2005.

USEPA is approaching the perchlorate issue in a two-step process. The first involves requiring a nationally representative sampling of drinking water systems to test for perchlorate to determine whether the widespread occurrence of perchlorate requires a national standard. This three-year testing period ended in 2003. The data related to monitoring of unregulated contaminants from public water systems complying with the Unregulated Contaminant Monitoring Regulation (UCMR) has been compiled and is available for drinking wells that serve 10,000 or more people.

The second phase involves conducting a risk assessment to establish what is called a Reference Dose, which is the amount of perchlorate in drinking water that USEPA considers "safe" if consumed every day. In 2002, USEPA published its draft risk assessment and proposed a Reference Dose of 1 part per billion (ppb) for perchlorate in drinking water, an amount equal to one-half teaspoon of perchlorate in an Olympic-sized pool.

The Reference Dose must be formally adopted before the federal government can develop a Maximum Contaminant Level or MCL - for how much perchlorate can be allowed in drinking water. The US EPA reference dose of 0.0007 mg/kg/day was published in USEPA Integrated Risk Information System (IRIS) database on February 18, 2005. The IRIS summary is based on the technical review of the "Health Implications of Perchlorate Ingestion" by the National Research Council of the NAS. The review followed two external draft toxicological reviews of perchlorate prepared by EPA (1998, 2002) that were also subject to public comment and independent external peer review.

California Office of Environmental Health Hazard Assessment has set a state Public Health Goal (PHG) for perchlorate of 6 ppb. This accounted for exposure from water, farm products and cow's milk. However, because there is still disagreement among the medical, scientific and regulatory communities on the science, state regulators agreed to review the findings of the NAS. California has considered the NAS findings and will not revise the PHG.

The PHG is only a goal, not a standard. California can now consider setting a MCL, for perchlorate. The California Department of Health Services (cal DHS) has set the notification level of perchlorate in drinking water to 6 ppb. If the notification level is exceeded, water system operators are required to notify local government agencies. The Cal DHS also recommends that consumers be notified, and that the drinking water source be removed from service, if perchlorate is found at levels 10 times the notification level. Some drinking water purveyors have already stopped serving drinking water that contains any amount of detectable perchlorate, thereby preventing potential exposures.

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The State Water Resource Control Board Region 2 San Francisco has developed Environmental Screening Levels for the protection of water resources. These screening levels are published as guidelines for remediation.

Environmental Screening Levels

USEPA Region IX also publishes screening levels for remediation known as Preliminary Remediation Goals (PRG). The PRG combine current toxicity values with standard exposure factors to estimate contaminant concentrations in environmental media that the agency considers protective of humans over a lifetime. Exceeding a PRG suggests that further evaluation should be initiated such as additional sampling or a site specific risk assessment. PRGs do not consider impact to groundwater or address ecological concerns.

PERCHLORATE SCREENING LEVELS	SOIL	GROUNDWATER
SWQCB Region 2 Shallow Soil ESL Residential and Industrial/Commercial Use Groundwater Potable	.007 mg/kg .007 ppm 7 ppb	6 ug/l 6 ppb
SWQCB Region 2 Shallow Soil ESL Residential and Industrial/Commercial Use Groundwater Not Potable	1.2 mg/kg 1.2 ppm 1200 ppb	600 ug/l 600 ppb
SWQCB Region 2 Deep Soil ESL Residential and Industrial/Commercial Use Groundwater Potable	.01 mg/kg .01 ppm 10 ppb	6 ug/l 6 ppb
SWQCB Region 2 Deep Soil ESL Residential and Industrial/Commercial Use Groundwater Not Potable	1.2 mg/kg 1.2 ppm 1200 ppb	600 ug/l 600 ppb
USEPA Region IX Residential	7.8 mg/kg 7.8 ppm 7800 ppb	
USEPA Region IX Industrial/Commercial Use	100 mg/kg 100 ppm 100,000 ppb	
USEPA Region IX Tap Water		3.6 ug/l 3.6 ppb

Current State Advisory Levels

STATE	ADVISORY CRITERIA	CONCENTRATION
Texas	Drinking Water Action Level	4 ppb
Arizona	Health-Based Guidance Level	14 ppb
New York	Drinking Water Planning Level	5 ppb

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STATE	ADVISORY CRITERIA	CONCENTRATION
New York	Public Notification Level	18 ppb
New Mexico	Drinking Water Screening Level	1 ppb
Nevada	Public Notice Standard	18 ppb
Massachusetts	Precautionary Recommendation to Local Water District	1 ppb
Maryland	Advisory Level	1 ppb

VII. FEDERAL FACILITIES

Federal Facility Compliance Act (FFCA) October 6, 1992
42 USC 3004

Before the passage of the FFCA, the federal government maintained that it was not subject to administrative and civil fines and penalties under solid and hazardous waste law because of the doctrine of "sovereign immunity."

Congress enacted the FFCA which brought federal facilities into the same legal framework as the private sector. This eliminated the double standard in the United States by which the same government that developed laws to protect human health and the environment, and required compliance in the private sector, was itself not assuming the burden of compliance. In the legislation Congress specifically waived sovereign immunity with respect to RCRA for federal facilities.

Under section 107 of the FFCA of 1992, EPA was required, in consultation with DOD and the states, to issue a rule identifying when military munitions become hazardous waste under RCRA, and to provide for protective storage and transportation of that waste. Under the rule issued by EPA, military munitions are subject to RCRA when, among other things, (1) unexploded munitions or their constituents are buried or otherwise disposed of, or (2) when used or fired munitions are taken off-range.

Federal Military Munitions Rule, 62 FR 6621, February 12, 1997
Munitions as Hazardous Waste

Over the years, Congress has specifically delegated statutory authority to the Department of Defense (DOD) for developing and promulgating explosives safety regulations for the safe storage, handling, and use of munitions. In 1992, the Federal Facility Compliance Act (FFCA) was signed into law. This law required the U.S. Environmental Protection Agency (EPA), in consultation with DOD and the States, to publish regulations that identify when conventional and chemical military munitions become hazardous waste and subject to Subtitle C of RCRA, and that provide for the

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safe storage and transportation of such waste. These regulations, entitled the Military Munitions Rule (MR) (62 FR 6621, February 12, 1997), define when military munitions become waste and how these waste military munitions (WMM) will be managed, became effective at the federal level on August 12, 1997. California has not adopted the Munitions Rule Regulations yet.

Department of Defense (DOD) Policies

DOD's operations at military installations and operational ranges in the United States are subject to laws and regulations governing a variety of environmental concerns, from water quality to the treatment and disposal of hazardous wastes. These laws include the Safe Drinking Water Act, the Clean Water Act, RCRA, the Federal Facility Compliance Act, and CERCLA. DOD is also generally required to comply with state and local environmental statutory and regulatory requirements on its installations and operational ranges. DOD has proposed that Congress specifically exempt it from requirements to clean up unexploded ordnance, munitions, and munitions constituents on operational ranges under RCRA and CERCLA.

DOD is authorized to classify military explosives. Commercial explosives, however, must be classified and approved by DOT. DOD Hazardous Material Classification Procedure is similar to the United Nations Classification Procedure. According to the DOD, ammonium perchlorate manufactured at 200 microns has been tested and classified as UN Class 5, Division 5.1 oxidizer. The U.S. Army currently classifies ammonium perchlorate with particle size under 15 microns as Class 1, Division 1.1 explosive. Ammonium perchlorate with particle size over 15 microns and stored near explosive materials is classified as Class 1, Division 1.3 explosive. The Army classifies 200 microns ammonium perchlorate as Class l, Division 1.4 explosive when it is located in an explosive area.

This Standard is issued under the authority of DOD Directive 6055.9, "DOD Explosives Safety Board (DDESB) and DOD Component Explosives Safety Responsibilities," July 29, 1996. It establishes uniform safety standards applicable to ammunition and explosives, to associated personnel and property, and to unrelated personnel and property exposed to the potential damaging effects of an accident involving ammunition and explosives during their development, manufacturing, testing, transportation, handling, storage, maintenance, demilitarization, and disposal.

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